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| **Common Core State Standard(s):**  **6.NS.4** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. | **Instructional Resources:**   * Holt 5-5 * **Hundreds Chart** * **GCF Warm Up** * **Methods to Finding LCM Extended Notes** * **Venn Diagram Extended Notes** * **Letter Conundrums** * **LCM Word Problems** * **LCM Word Problems Answer Sheet** * **Riddle Me This** * **Warm-up Venn Diagram** * **GCF and LCM Worksheet** * **GCF and LCM Mixed Word Problems** * **Most Wanted Poster** * **Exit Ticket** * **Activity Cards** * **Making Connections with GCF and LCM**. * **Multiples Match activity** * **Venn Diagrams and GCF activity** * Materials needed: Unifix cubes, hundred charts, number tiles, Ziploc bags, dice\*   \**If available refers to resources purchased by individual schools* |
| **Mathematical Practice Standard(s):**  **MP. 1** Make sense of problems and persevere in solving them. | **Warm-up:**  Day 14   * **GCF word problem/warm up**   Day 15   * Use the **warm-up Venn diagram sheet** as a review of GCF and LCM. Have students choose two numbers to complete the diagram. Then have students share their numbers and their process for solving the problem. |
| **Learner Objective:**  As a result in learning, students should be able to…   1. find the least common multiple of two or more numbers. 2. solve problems involving LCM and GCF. |
| **Instruction:**  **Day 14:**  Instruction   * After completing the introductory activity, have students brainstorm a definition for *least common multiple*. * After defining what the LCM is, see if students can come up with a method for finding it. * Then using the **methods to finding LCM** and **Venn diagram extended notes**, lead students through the various methods to finding least common multiple. * Work through the examples for each method with students. * Today the students will work on lesson 3 - Multiple Approaches, in MathScape, "From Wholes to Parts." The students will be working on finding common multiples and the LCM.   **Activity:**   * Have the students open their MathScape books to p. 100, where they will read the directions on how to play "It's in the Cards." If you do not have playing cards in your classroom, there is a set that has been created for your use (**activity cards**). ((SIOP) This is a great idea, but might take a lot of explaining or modeling for English Language Learners. First, model using an overhead and then model with a student. Ability group students for the activity and then rotate around the room to assess comprehension. Ask guided questions about the concepts while students work.) * Complete the **LCM Word Problems** and use the **LCM Word Problem Answer Sheet** for students to record their work and solutions. * Complete the **Letter Conundrums sheet.** * For groups who finish early, students can work on **Riddle Me This** with a partner. * The following problem can be completed in class or for homework:   **Problem:** Find the Smallest Number of Cards  A board game for 2 to 6 players has a deck of cards that can always be divided evenly among all players. What is the smallest number of cards that are possible?  **Solution:** Sixty cards. The least common multiple of 2, 3, 4, 5, and 6 is 60.  **Credit**: From **November's Menu of Problems**, November 1999 *MTMS*. Contributed by William Jamski, Indiana University Southeast, New Albany, Indiana.  **Day 15**  Instruction   * **GCF and LCM Word Problems**-Hang the word problems up around the room. Divide the students into 12 groups. Assign each group to a problem. When the students complete a problem, they proceed to the next problem.   Independent Practice   * Students are to work independently on **GCF and LCM worksheet**. * Students can work on the **Most Wanted Poster**. You can show the example and the directions on the overhead and students work independently on their own poster. Students can cover their number with a piece of paper and you can hold a gallery walk allowing other students to guess the number. | |
| **Comment / Notes:**  Additional Resources for teaching LCM is Holt Lesson 5-5.  **Exit Ticket** also available.  **Re-teaching**   * Students can practice finding GCF with the **Venn Diagrams and GCF activity**. * Students can work on multiples with the **Multiples Match activity**.   **Enrichment**   * This activity was taken from the TAP Math workshop and can be used during independent practice or enrichment. The teacher needs to review volume of a prism before starting this activity. The activity is called **Making Connections with GCF and LCM**. * Students can work on the **Most Wanted Poster**. You can show the example and the directions on the overhead and students work independently on their own poster. Students can cover their number with a piece of paper and you can hold a gallery walk allowing other students to guess the number. * This problem can be done in class with partners or taken home as homework or project.   + A set of 100 open lockers is numbered from 1 - 100. Sarah comes by and closes all the lockers with even numbers. Then Sarah walks past the lockers again and checks the ones numbered with multiples of 3. If the locker is closed, she opens it; if it is open, she closes it. She repeats this with the multiples of 4, 5, 6, … and so on to 100. When she has finished, which lockers will be open? Explain how you know. * **Solution:** This is a famous problem that students may have already encountered. Even if they have seen it before, they may not completely understand it. Locker 1 will not be touched. It will remain open. Locker 2 will be closed because it will only be touched once. Locker three is also closed because it will only be touched once. Locker 4 will be open because it is touched twice because it is a multiple of 2 and 4. We are looking for a pattern for how many times the locker is touched. The number of times it is touched is related to how many factors the number has. If it has an even number of factors, including 1, it will be closed. Otherwise it is open. The only numbers that have an odd number of factors are perfect squares. For example, 16 has 1, 2, 4, 8, and 16 as factors. One means open, 2 closed, 4 open, 8 closed, 16 open. The reason that perfect squares are the only numbers with an odd number of factors is because factors must appear in pairs. For perfect squares, one pair is a number times itself. | |